HOW JUVENILE RECIDIVISM IS INFLUENCED BY TRAUMA AND COUNSELING: A META-ANALYSIS

A Thesis

Presented to the

Faculty of the College of Graduate Studies and Research

Angelo State University

In Partial Fulfillment of the

Requirements for the Degree

MASTER OF SCIENCE

by

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December 2020

Major: Counseling Psychology

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ACKNOWLEDGEMENTS

Initially, I would like to thank Dr. Nicole M. Lozano for mentoring throughout my master's program and on my thesis. Dr. Lozano's direction, support, and mentorship has been a critical aspect of my success in my program, this thesis, and my future career foals. Dr. Lozano has supported me on the days I wasn't sure what to do and helped me gain insight and direction into my future path.

Next, I would like to thank Dr. Stephen Lippi for his extensive help running, interpreting, and revising the statistics for this project. As a committee member, Dr. Lippi took on for me than he had to and was a critical aspect of this project being able to come to fruition. Dr. Lippi's knowledge and guidance proved to be a critical aspect of this thesis being successful.

Also, I would like to thank Dr. Erin Ashworth-King and Dr. June Smith for serving as committee members. The revisions from both of you were so helpful in making me a stronger writer and thinking through explanations in a more cohesive way. Finally, I would like to thank the psychology faculty at Angelo State University for all they have done for me over my 5 years in the department. Countless professors have played a role in helping me become the professional and student I am today. Without these faculty, I would not be so passionate about pursuing a doctoral program and going on to make an impact in our field.

ABSTRACT

Trauma is an issue that impacts people of all ages, races, and socioeconomic statuses; however, individuals who have been incarcerated often have experienced higher rates of trauma. More specifically, children are at a heightened risk for being impacted by the experience of trauma. This thesis conducted a meta-analysis to explore if the experience of trauma increased an individual's likelihood of committing a juvenile offense and recidivating, as well as if counseling juvenile offenders with trauma history decreases their recidivism. Using *beta*, this meta-analysis was able to determine that trauma does have a positive relationship to an individual's juvenile offense and recidivism rates, meaning that as trauma increases so too does the likelihood an individual will commit an offense or recidivate. Likewise, counseling had a negative relationship with recidivism, meaning that more counseling predicts less recidivism of individuals who had experienced trauma. Limitations and practice implications are also discussed.

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INTRODUCTION

Over 48,000 juveniles are incarcerated on any given day in the United States (Sawyer, 2019); however, there is no defining characteristic of incarcerated youth. 85% of juvenile inmates are male while 15% are female (Juvenile Incarceration, n.d.), and the ages can range from 10 to 18, though each state determines their own age range (National Juvenile Defender Center, n.d.). In addition, juvenile inmates come from different socioeconomic statuses and racial/ethnic backgrounds (Sawyer, 2019), and are incarcerated for time periods varying from hours to years (Sawyer, 2019). One constant, however, is the expectation that when juvenile inmates are released they have made significant changes while incarcerated, such as decreasing problematic behaviors, eliminating substance use, and modifying negative emotional issues such as anger (Yoder, Whitaker, & Quinn, 2017). However, little is known about the root causes of defiant or illegal behaviors, such as trauma, recidivism, and self-perception.

Research has shown strong correlations between trauma and mental health problems such as aggression or defiance, which in turn, increases the susceptibility to being arrested or incarcerated. A juvenile may be defiant, act out behaviorally, or commit illegal acts because of a history of trauma. Thus, the trauma that a child/adolescent is exposed to directly impacts the likelihood that he/she will be arrested or incarcerated. One assessment that is used to measure exposure to trauma is the Adverse Childhood Experience (ACE) questionnaire, which provides a score based on how many trauma exposures an individual has had from the ages of 0-18 years old (Centers for Disease Control and Prevention, 2019). ACE was created

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to understand the compounding effects of trauma, and is a widely-used measure to assess abuse (e.g., sexual or physical abuse), household challenges (e.g., substance use in the house, incarceration), and neglect (e.g., emotional neglect). Compounding effects of trauma have been correlated with negative mental health outcomes, chronic health conditions, and higher risky behaviors (CDC, 2019).

Other studies still go further: Fox et al. (2015) found that the likelihood of becoming a repeat juvenile offender is increased with each exposure to adverse childhood experiences. Consequently, the more trauma a juvenile is exposed to, the greater likelihood that they will become involved with the legal system through incarceration or probation/parole. Yoder, Whitaker, and Quinn (2017) sees trauma as key to understanding juvenile behavior: juveniles involved in the legal system have mental health problems such as anxiety, suicidal ideation, and anger that are linked with trauma histories at disproportionate levels to their counterparts who are not justice-involved. Previous research has supported an important link between trauma exposure and aggression in adolescence during the ages of 12-19, which could be moderated by anger, driven by sensitivity to rejection because of trauma exposure, or anxiety surrounding the anticipation of potential rejection (Mozley, Modrowski, & Kerig, 2018). Unfortunately, juveniles that express increased levels of anger are less likely to receive mental health services within the juvenile justice system as these behaviors require workers to forcefully control the individuals to solve the problems (Yoder, Whitaker, & Quinn, 2017). If these individuals are not treated and able to learn new skills, there is a greater chance their behaviors will not change.

Given the link between trauma and incarceration (Mozley, Modrowski, & Kerig, 2018), the chance of recidivism in such individuals is high. Generally defined, recidivism is the re-offense of a criminal, but is more directly specified as "rearrest, readjudication/reconviction, recommitment/reincarceration, technical violations/revocations, new offenses processed by the adult criminal justice system, new offenses that occur after a youth is no longer under system supervision" (Walsh & Weber, 2014). States organize their juvenile justice systems differently, which leads to no succinct data regarding recidivism. Only 39 US states track recidivism rates in any capacity (MST Services, 2018), with some states tracking recidivism based on none, one, or a combination of offences. According to the CSG Justice Center (as cited in MST Services, 2018), of the 39 states that reported recidivism data in 2015, the highest rate of recidivism was within five years at 84%. While this may seem high, this percentage represents recidivism as a whole and cannot be delineated into categories such as those who experienced trauma. This lack of standard protocol in reporting creates problems in truly understanding recidivism rates.

In order to help decrease the growing chances of recidivism, work is being done to develop and test strategies to decrease recidivism rates for juveniles and help them become more adaptive to society. One such strategy that research supports is the use of mode deactivation therapy (Hollman, 2010; Murphy & Cautilli, 2014; Swart & Apsche, 2014). Mode deactivation therapy is a form of therapy that implements specific, goal-oriented procedures in order to modify maladaptive emotions, behaviors, and cognitions. In a study comparing baseline to post-treatment scores, such as beliefs about aggression, there was a significant decrease across all scores whenever mode deactivation therapy was used and after

a year the rate of recidivism for those in the treatment group was 7% (Thoder, & Cautilli, 2011).

Another important aspect of recidivism is the social desirability that drives responses to mental health screenings or risk assessments. Social desirability occurs as individuals respond to questions in a way they believe are more socially acceptable than their true answer might be, in hopes of increasing favorable evaluations and decreasing negative evaluations of oneself by others (Lavrakas, 2008). Due to the fact that mental health problems are often viewed as socially unacceptable or unfavorable, it is possible that juveniles will either report less mental health problems than is true, or they will not attribute their problematic behaviors to their mental health problems and have an unrealistic view of the implications of their behaviors (Yoder, Whitaker, & Quinn, 2017). This unrealistic view means that juveniles are likely to have a more self-serving view of the implications of their behaviors, such as anger getting them their way, than they are to attribute their anger to their trauma histories. It would be important to have juveniles work on changing their behavioral views to be more accurate for them to be able to view and modify their behaviors, thoughts, and emotions appropriately. If they can view and control their behaviors more appropriately, it is possible it could lead to reduced recidivism and fewer juveniles incarcerated.

This study utilized a meta-analysis to focus on the effects of juvenile offenders' trauma and counseling on recidivism rates. A meta-analysis is a systematic way of combining data from multiple studies in order to draw a single conclusion, giving it more power than a single study because of more participants, more diversity, and multiple results. This method is important as it allows for more effective data generalization, which confirms if the

research is showing what is believed by the field, and has greater statistical power than single studies (Meta-Analysis, 2019).

The meta-analysis aimed to address the following hypotheses: a) that a history of trauma will increase the likelihood of juvenile offenses, b) that juvenile offenders with a history of trauma are more likely to recidivate, and c) that counseling juvenile offenders decreases their likelihood of recidivism (see figures 1 and 2).

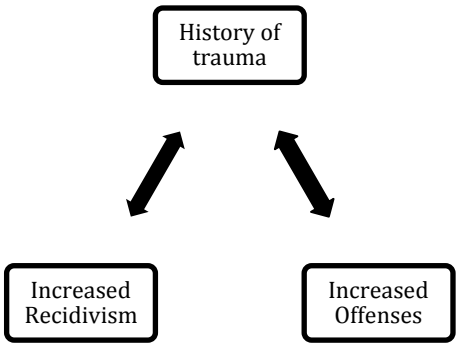

Figure 1: Hypothesis 1 and 2

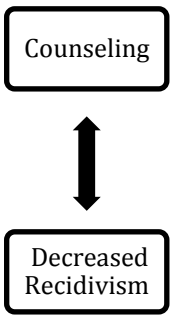

Figure 2: Hypothesis 3

METHODS

As a meta-analysis, this study utilized previously published research, rather than participants. A search was done of related terms to generate a list of published research relative to the hypotheses. These studies were then sorted to find what was applicable to each hypothesis and synthesized. Multiple databases were accessed to search for literature, including APA PsycInfo, APA PsycArticles, Criminal Justice Abstracts with Full Text, Family Studies Abstracts, Humanities Full Text (H.W. Wilson), Legal Collection, Legal Information Reference Center, Psychology and Behavioral Sciences Collection, Social Work Abstracts, SocINDEX with Full Text. The search terms used included *juvenile offense and trauma*, *trauma and juvenile recidivism*, and *counseling and juvenile recidivism* to match the hypotheses. Studies from 2009-2019 were used to account for research published in the past ten years. Following Rhoden, Macgowan, and Huang (2019), articles were included or excluded based on the following study criteria: the study being available in English, from a peer-reviewed journal, conducted in the United States, involving juvenile offenders, is a quantitative study, and the mean age of the population is under 18 years old.

Hypothesis 1

The initial search for hypothesis one used the terms “juvenile offense” and “trauma” to generate an initial yield of 232 results. Exact duplicate results were filtered out, resulting in 174 results. Hypothesis one shared 10 articles with hypothesis two. In order to prevent using the same data for different purposes, these articles were filtered into which hypothesis was the best fit leaving two articles with hypothesis one. This left 30 articles for inclusion.

Once the articles were selected, they were analyzed to determine if the study was suitable for inclusion according to how appropriate the study was to the hypothesis. This

resulted in 20 studies for hypothesis one. The findings of the final sample were then compared and synthesized. Each study's sample size and beta value for the related variables were placed into a table to determine the weighted mean effect size, using *Pearson's r* – a statistical analysis that measures linear correlation between two variables. The studies that did not include a beta value were excluded at this point. Beta values were needed for inclusion in order to convert and calculate *Pearson's r*. The number of excluded articles for hypothesis one was 10, leaving a remaining number of 10 studies to be used in the meta-analysis (see Figure 3).

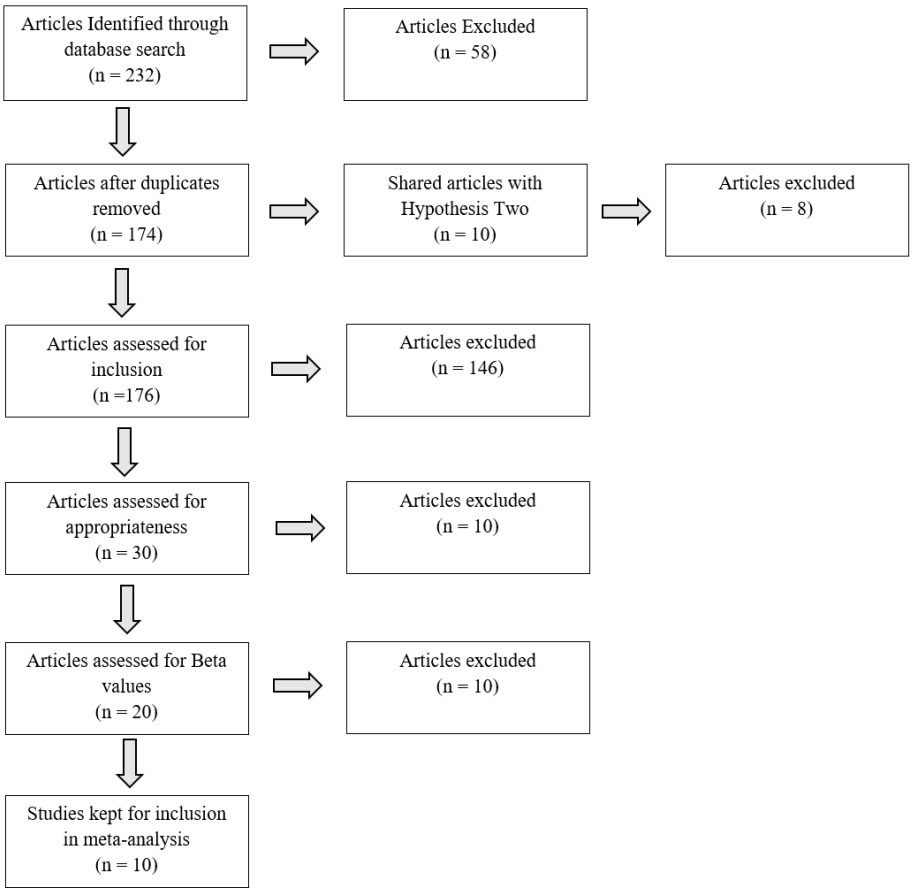

Figure 3: Hypothesis 1 Flow Chart

Hypothesis 2

The initial search for hypothesis two used the terms “trauma” and “juvenile recidivism,” resulting in 90 studies. After accounting for exact duplicate research studies, 48 studies were left. Hypothesis two shared 10 articles with hypothesis one. After following the same strategy used in hypothesis one for best fit of these articles, it was determined that eight articles would remain with hypothesis two. The Rhoden, Macgowan, and Huang (2019) protocol for inclusion and exclusion criteria was also used for this hypothesis, resulting in 14 studies. The selected articles followed the same protocol as hypothesis one to determine if they were suitable for inclusion based on applicability to the research question, resulting in 12 studies. These 12 studies’ data were then used to conduct the meta-analysis. Seven articles were excluded for not containing a beta value, which left a total of 5 studies for data analysis (see Figure 4).

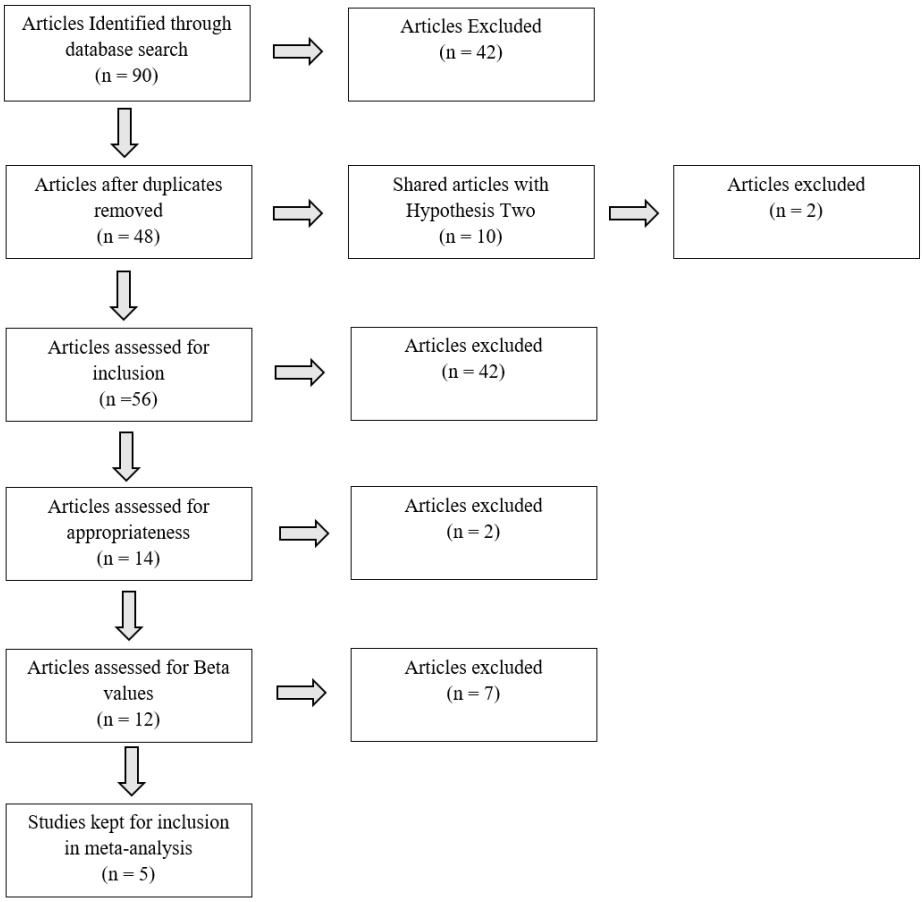

Figure 4: Hypothesis 2 Flow Chart

Hypothesis 3

The initial search for hypothesis three used the terms “counseling” and “juvenile recidivism” and resulted in 77 articles. Exact duplicates were again removed leaving 55 articles to assess for inclusion and exclusion criteria. Again, according to Rhoden, Macgowan, and Huang’s criteria (2019), articles were included or excluded, resulting in 26 articles. These 26 articles were analyzed to determine if they should be used in the meta-analysis based on fit with the research question. Eleven studies were left for inclusion following this. Five articles were then removed for not containing a beta value in order to

calculate *Pearson's r*, following the same protocol as above, leaving a final total of 6 studies for the meta-analysis (see Figure 5).

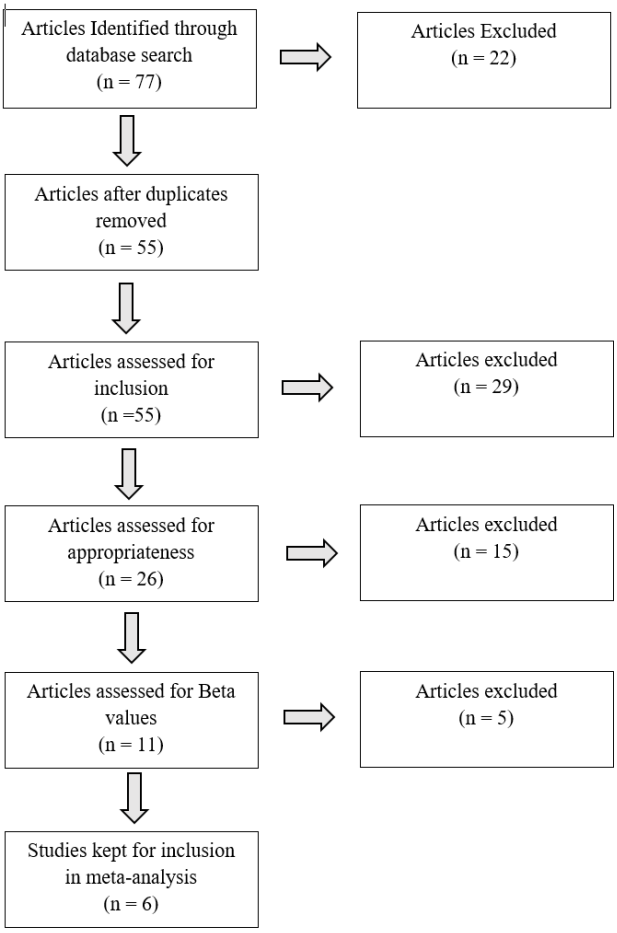

Figure 5: Hypothesis 3 Flow Chart

Determining Effect Size

Twenty-two articles were excluded because they did not report data that could be used to establish effect size (n = 9), nor was effect size reported (n = 13). The decision was made to convert beta values to *Pearson's r* following Peterson and Brown (2005) and Field (2005). By doing so, a researcher is able to calculate the overall effects. According to Peterson and Brown (2005) if the beta coefficients reside between .50 and -.50 the relationship to r is independent of sample size and variables and is more accurate than

inputting 0 values. Two studies were excluded from hypothesis one, one value from a study was excluded from hypothesis two, and one study was excluded from hypothesis three because the beta values were outside of the .50 and -.50 range. This resulted in a final inclusion number of 8, 5, and 5, respectively. The Hunter and Schmidt method discussed in Field (2005) on pages 5 and 6 was used for statistical calculations. The weighted means were used to calculate the variance of sample effect sizes. Next, the variance of the sampling error and population effect sizes were calculated in order to determine a 95% credibility interval. This data was then used to address the three hypotheses for this study.

RESULTS

Overview

A total of 18 studies were used to test the hypotheses, involving 93,654 total participants, 35,189 of whom were male and 8,330 female. Gender breakdowns for two studies could not be calculated when the gender percentages totaled more than the sample population (Kowalski, 2019) or when no gender data was reported (Sullivan & Gummelt, 2017). All studies were conducted in the United States, across multiple states and jurisdictions. Many of the studies used ACE scores to assess for trauma history. Physical, emotional, sexual abuse, and domestic violence were all tested and accounted for within the studies, however trauma was included as one variable rather than individual variables. Hypothesis effect sizes are interpreted as small, medium or large. A "small" effect size ranges from 0.0 to 0.2 and is difficult to observe. An example of a small effect size could be the visible height difference between a 14 year old female and a 15 year old female. A "medium" effect size ranges from 0.3 to 0.7 and is a fairly obvious observable difference. An example of this would be the visible height difference between a 12 year old female and an 18 year old female. Finally, a "large" effect size is 0.8 or larger and is an obvious difference between the two groups. This could be represented by the visible height difference between a female toddler and an 18 year old female.

Hypothesis 1

Hypothesis 1 was that trauma would increase the likelihood of juvenile offense. There were 8 studies used to analyze this hypothesis, totaling 36,349 participants. The weighted mean effect size for this hypothesis was $\bar{r}$ = .31759. Next, the variance of sample effect sizes

was determined to be σ_r^2 = .428220. This value was used to determine the population effect size. Next, the sampling error variance was calculated to be σ_ϵ^2 = .00178. In order to calculate the population effect size variance, the sampling error variance was subtracted from the variance of sample effect sizes resulting in a value of σ_ρ^2 = .42644. Finally, a 95% credibility interval of 1.5975 to -.96234 was determined (see Appendix A). Hypothesis one resulted in a medium effect size meaning that as trauma increased so did the likelihood of a subject becoming a juvenile offender. Calculations and study information can be found in Appendix A.

Hypothesis 2

In the 5 studies containing data relative to how trauma impacts the likelihood of recidivism in juvenile offenders, there was a total of 56,165 participants. The weighted mean effect size for this hypothesis was $\bar{r}$ = .1142885. The next step was to determine the variance of the sample effect sizes for this hypothesis. This value was determined to be σ_r^2 = .054233. The sampling error variance was calculated to be σ_ϵ^2 = .00017346. The population effect size variance resulted in a value of σ_ρ^2 = .05406. Finally, a 95% credibility interval of .570002 to -.34143 was determined (see Appendix B). Hypothesis two was supported based on a small effect size, meaning that as trauma increases so does likelihood of recidivism. Calculations and study information can be found in Appendix B.

Hypothesis 3

In the 5 studies containing data relative to how counseling juvenile offenders' impacts recidivism, there was a total of 1,140 participants. The weighted mean effect size for this hypothesis was $\bar{r}$ = -.33959. The next step was to determine the variance of sample effect sizes for this hypothesis. This value was determined to be σ_r^2 = .50366. Next, the sampling

error variance was calculated to be σ_{ϵ}^{2} = .00345. The population effect size variance resulted in a value of σ_{ρ}^{2} = .50022. Finally, a 95% credibility interval of 1.04664 to –1.72582 was determined (see Appendix C). Based on these results, hypothesis three was supported based on a medium effect size. This means that counseling juvenile offenders is linked with lowered recidivism rates. Calculations and study information can be found in Appendix C.

DISCUSSION

The typical challenges juveniles face during development can be compounded by trauma. The goal of this study was to analyze previous research and understand the relationship between trauma, juvenile offense, and recidivism. This meta-analysis is an important contribution to the field as it has synthesized current research to inquire about its cohesion. This meta-analysis helps future researchers and practitioners understand what has been done, what is known, and how treatment can be improved for offenders. This work also uncovered important issues with regard to reporting standards within studies. It is well known that the differences in reporting data from jurisdictions and states makes it difficult to compare interventions and outcome data. However, the meta-analysis conducted uncovered that there is also not a consistent method of research data being reported, making it difficult to compare studies to fully understand what is being found and supported. Recidivism is notably harder to track as it is understood and counted in different ways, if recorded at all.

Overview of Findings

Hypothesis one focused on whether trauma increases the likelihood of juvenile offense. The results supported this hypothesis and indicated a positive relationship between trauma history and likelihood of committing a juvenile offense. This relationship indicates that as trauma history increases so does likelihood of committing a juvenile offense. Trauma history increasing means that an individual is accumulating more traumatic events. For instance, an individual who has experienced physical abuse on one instance in their lifetime would have a lower trauma history score than an individual who experienced physical abuse weekly for 4 years. The individual with the repetitive abuse history would be at greater risk

of becoming involved in the juvenile justice system through committing an offense than the individual with one abuse event.

Hypothesis two sought to determine if juvenile offenders with a history of trauma were more likely to recidivate. The results of this meta-analysis supported this hypothesis and showed a positive relationship between trauma history and likelihood of the individual recidivating, meaning that as trauma history increases so does likelihood of recidivism. As mentioned above, more trauma is determined by severity and number of traumatic events throughout an individual's lifetime. For this hypothesis, having any trauma was an indicator that a juvenile offender would be more likely to recidivate than juvenile offenders that have no trauma history.

Finally, hypothesis three attempted to understand if counseling juvenile offenders with a trauma history decreases recidivism. Some of the counseling types specifically addressed in this hypothesis were brief intervention therapy, individual therapy, group therapy, psychoeducation, and intensive behavior management programs. This hypothesis was also supported with the results showing a negative relationship between counseling and recidivism. This means that as counseling increases, an individual's likelihood of recidivating decreases. This is important to know because it tells professionals in this field that if juvenile offenders with a trauma history are more likely to recidivate, that recidivism risk can be decreased by providing counseling services. This could be further expanded into what specific services are the most beneficial, how do juveniles view these services, and what are the changes happening in counseling that lead to decreased recidivism.

Limitations

Inconsistent Data Reporting

Despite all hypotheses being supported, there are several limitations, most focusing on the state of research available. In particular, there is a clear lack of unity across reporting juvenile offender data and related data (e.g., trauma experiences). Several studies related to the hypotheses had to be excluded due to not containing any kind of comparable data or reporting data that was extremely difficult to decipher (i.e., Borduin, Schaeffer, & Heiblum, 2009; Kubak & Salekin, 2009; Wasserman & McReynolds, 2011). Another identified limitation was the difficulty in separating severity of trauma, different offenses, or different styles of counseling due to the lack of consistent reporting and small numbers of studies produced. In order to fill this gap in research, more work should be done assessing these issues and then reporting them in a universal set of variables.

Small Number of Studies

The typical effect sized utilized in a meta-analysis, *Cohen's d,* was unusable as few selected articles reported means and standard deviations, a basic statistic in quantitative research. Given the inability to use *Cohen's d*, this paper instead uses the Hunter and Schmidt (2004) method of converting *beta* weight to *Pearson's r*. In following this method, the statistics have been interpreted as meaningful. However, the interpretation should be cautious, given that the credibility intervals span zero, indicating that there could be a time where there is no relationship. We suspect that this is inherent to the Hunter and Schmidt method because of the mathematical calculations that occur. With that said, the weighted average indicates that there is indeed some relationship, and thus we feel comfortable reporting the medium effect sizes

This meta-analysis used a very small number of studies due to inconsistent data reporting. Many studies related to the research questions had to be excluded in order to make comparisons. The typical effect sized utilized in meta-analysis, *Cohen's d,* was unusable since so few articles reported means and standard deviations, a basic statistic in quantitative research. The need for data reporting standards is imperative so that future researchers and practitioners can truly understand what is being found by the data and what needs to be done going forward. It is not practical for professionals to spend hours contacting researchers to get different data statistics in order to be able to fully interpret their results and what was done to ensure validity of the article.

Additionally, the small number of studies introduces the issue that if more studies had been used the results might be different. The more research that can be included would result in a better picture of what is truly being found across disciplines, but due to each discipline, journal, and researcher reporting data differently, it is virtually impossible to truly synthesize and compare the data to get a clear result.

A final issue in terms of data reporting focuses on the use of solely qualitative data. Many studies were excluded given the reliance on interviews to assess trauma history and usefulness of counseling (i.e., Ezell, Richardson, Salari, & Henry 2018; Falligant, Alexander, & Burkhart, 2017; Huskey & Tomczak, 2013;). Qualitative data can serve as a useful source of information; however, it would be advantageous to pair with quantitative data showing the numerical effects of these issues, not just beliefs. As mentioned in the introduction, social desirability impacts how individuals respond to questions, likely responding in ways that they believe will make the answers more socially acceptable in order to have a more favorable view placed upon them (Lavrakas, 2008). Social desirability within qualitative data

may present itself in that juvenile offenders with mental health issues have negative stigmatizations already placed on them and thus are more likely to report answers that are favorable to what they deem the researcher wants to know. In order to get an accurate picture of what research is finding, it is imperative that a universal reporting standard is used.

Implications for Theory and Practice

As the results show, all three research questions were supported through this meta-analysis, providing practitioners and professionals opportunities to address to decrease juvenile involvement in the legal system, as well as to help decrease recidivism so that these individuals can remain in the community without participating in illegal activities. This data helps further the work with juveniles because it highlights points of interest that are identifiable ways to change and illuminates which areas need to be further researched and understood. Understanding that trauma increases juvenile offense and recidivism shows that more focus should be put on early identification of traumatic events in children's lives and treating those events appropriately. If this trauma is identified and treated, it could lead to a decrease in juveniles committing offenses and becoming incarcerated.

Another implication of this research is that counseling does have a positive impact on offense rates for juveniles with trauma history. This supports the development of programs, such as Cognitive Behavior Therapy (Jewell, Malone, Rose et al., 2015) or multisystemic therapy (Borduin, Schaeffer, & Heiblum, 2009), in juvenile detention facilities, probation programs, and residential treatment facilities to address trauma history and treat it so that juveniles can become more adaptive and better able to manage the stressors of life.

CONCLUSION

In conclusion, this meta-analysis was conducted in order to compare and synthesize research related to juvenile offense, recidivism, trauma, and counseling. This would provide professionals with an accurate understanding of what research indicates regarding these topics and how to prevent, intervene, and treat. The study found that juveniles with more exposure to trauma are at an increased risk for committing a juvenile offense and becoming incarcerated. These individuals are also more likely to recidivate if their trauma is left untreated. However, if the traumatized individual receives counseling services their likelihood to recidivate is decreased. This is important because it identifies steps that professionals within this field can take to prevent juveniles from becoming incarcerated, ways they can intervene to prevent recidivism, and identifies the need for program development for treatment of trauma within this population. More work needs to be done in order to determine a unified way to track juvenile offense data, characteristics of juvenile offenders (e.g. trauma history), and the treatment strategies being used to help aid in decreasing recidivism. Also, research should be done in how to prevent traumatized youth from becoming incarcerated and how to intervene early in involvement to prevent recidivism

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APPENDIX A

Hypothesis 1 Calculations

Table 1: Beta Values 1

Study	β	$r = \beta + .05\lambda$	*Pearson's r*
Fox, Perez, Cass, Baglivio, & Epps (2015)	0.298	.298 + (.05 x 1)	0.348
Espinosa & Sorensen (2016)	-0.005	-.005 + (.05 x 0)	-0.005
Yoder, Hodge, Ruch, & Dillard (2019)	0.451	.451 + (.05 x 1)	0.501
Burton, Leibowitz, Eldredge, Ryan, & Compton (2011)	sexual = .359	.359 + (.05 x 1)	0.409
	physical = .09	.09 + (.05 x 1)	0.14
Marini, Leibowitz, Burton, & Stickle (2014)	0.19	.19 + (.05 x 1)	0.24
Evans & Burton (2013)	0.51	.51 + (.05 x 1)	0.56
Bovard-Johns, Yoder, & Burton (2015)	-0.156	-.156 + (.05 x 0)	-0.156
Brown & Burton (2010)	0.013	.013 + (.05 x 1)	0.063

Table 2: Weighted Mean Effect Size 1

Study	N	*r*	N*r*
Fox, Perez, Cass, Baglivio, & Epps (2015)	22,575	0.348	7,856.10
Espinosa & Sorensen (2016)	5,019	-0.005	-25.095
Yoder, Hodge, Ruch, & Dillard (2019)	7,073	0.501	3,543.573
Burton, Leibowitz, Eldredge, Ryan, & Compton (2011)	451	0.029	12.899
	406	0.24	97.44
Marini, Leibowitz, Burton, & Stickle (2014)	161	0.56	90.16
Evans & Burton (2013)	332	-0.156	-51.792
Bovard-Johns, Yoder, & Burton (2015)	332	0.063	20.916
Brown & Burton (2010)	36,349		11,544.20

Table 3: Credibility Intervals 1

Study	N	r	$(r-(-\bar{r}))^2$	$n(r-(-\bar{r}))^2$	Nr
Fox, Perez, Cass, Baglivio, & Epps (2015)	22,575	0.348	0.443	10,000.952	7,856.10
Espinosa & Sorensen (2016)	5,019	-0.005	0.098	490.419	-25.095
Yoder, Hodge, Ruch, & Dillard (2019)	7,073	0.501	0.670	4,739.544	3,543.573
Burton, Leibowitz, Eldredge, Ryan, & Compton (2011)	451	0.029	0.120	54.051	12.899
	406	0.24	0.311	126.228	97.44
Marini, Leibowitz, Burton, & Stickle (2014)	161	0.56	0.770	123.996	90.16
Evans & Burton (2013)	332	-0.156	0.026	8.669	-51.792
Bovard-Johns, Yoder, & Burton (2015)	332	0.063	0.065	21.519	20.916
Brown & Burton (2010)	36,349			15,565.38	11,544.20

APPENDIX B

Hypothesis 2 Calculations

Table 4: Beta Values 2

Study	β	$r = \beta + .05\lambda$	*Pearson's r*
Tossone, Butcher, & Kretschmar (2017)	0.27	.27 + (.05 x 1)	0.32
	0.28	.28 + (.05 x 1)	0.33
	0.24	.24 + (.05 x 1)	0.29
	0.45	.45 + (.05 x 1)	0.50
Ford & Hawke (2012)	0.05	.05 + (.05 x 1)	0.10
Kowalski (2019)	male = .07	.07 + (.05 x 1)	0.12
	female = .03	.03 + (.05 x 1)	0.08
Kretschmar, Butcher, Flannery, & Singer (2016)	0.11	.11 + (.05 x 1)	0.16
Day, Zahn, & Tichavsky (2015)	male = -.198	-.198 + (.05 x 0)	-0.198
	female = .058	.058 + (.05 x 1)	0.108

Table 5: Weighted Mean Effect Size 2

Study	N	*r*	N*r*
Tossone, Butcher, & Kretschmar (2017)	280	0.32	89.60
	280	0.33	92.40
	143	0.29	41.47
	194	0.50	97
Ford & Hawke (2012)	394	0.10	39.4
Kowalski (2019)	38,100 (male)	0.12	4,572
	12,762 (female)	0.08	1,020.96
Kretschmar, Butcher, Flannery, & Singer (2016)	2,545	0.16	407.2
Day, Zahn, & Tichavsky (2015)	1,142 (male)	0.108	123.336
	325 (female)	-0.198	-64.35
total:	56,165		6,419.016

Table 6: Credibility Intervals 2

Study	N	*r*	$(r-(-\bar{r}))^2$	$n(r-(-\bar{r}))^2$	N*r*
Tossone, Butcher, & Kretschmar (2017)	280	0.32	0.189	52.810	89.60
	280	0.33	0.197	55.270	92.40
	143	0.29	0.163	23.373	41.47
	194	0.50	0.377	73.206	97
Ford & Hawke (2012)	394	0.10	0.046	18.092	39.4
Kowalski (2019)	38,100 (male)	0.12	0.055	2091.351	4,572
	12,762 (female)	0.08	0.038	481.740	1,020.96
Kretschmar, Butcher, Flannery, & Singer (2016)	2,545	0.16	0.075	191.470	407.2
Day, Zahn, & Tichavsky (2015)	1,142 (male)	0.108	0.049	56.429	123.336
	325 (female)	-0.198	0.007	2.277	-64.35
total:	56,165			3046.018	6,419.016

APPENDIX C

Hypothesis 3 Calculations

Table 7: Beta Values 3

Study	β	$r = \beta + .05\lambda$	*Pearson's r*
Dembo et. al (2014)	-0.433	-.433 + (.05 x 0)	-0.433
Sullivan & Gummelt (2017)	0.149	.149 + (.05 x 1)	0.199
Lovins, Yoder, & Berry (2017)	-0.422	-.422 + (.05 x 0)	-0.422
Barnes, Campbell, Anderson, Campbell, Onifade, & Davidson (2016)	-0.44	-.44 + (.05 x 0)	-0.44
Yoder, Hansen, Lobanov-Rostovsky, & Ruch (2015)	-0.07	-.07 + (.05 x 0)	-0.07

Table 8: Weighted Mean Effect Size 3

Study	N	*r*	N*r*
Dembo et. al (2014)	180	-0.433	-77.94
Sullivan & Gummelt (2017)	119	0.199	23.681
Lovins, Yoder, & Berry (2017)	400	-0.422	-168.8
Barnes, Campbell, Anderson, Campbell, Onifade, & Davidson (2016)	360	-0.44	-158.4
Yoder, Hansen, Lobanov-Rostovsky, & Ruch (2015)	81	-0.07	-5.67
total:	1,140		-387.129

Table 9: Credibility Intervals 3

Study	N	*r*	$(r-(-\bar{r}))^2$	$n(r-(-\bar{r}))^2$	N*r*
Dembo et. al (2014)	180	-0.433	0.597	107.440	-77.94
Sullivan & Gummelt (2017)	119	0.199	0.020	2.351	23.681
Lovins, Yoder, & Berry (2017)	400	-0.422	0.580	232.006	-168.8
Barnes, Campbell, Anderson, Campbell, Onifade, & Davidson (2016)	360	-0.44	0.608	218.792	-158.4
Yoder, Hansen, Lobanov-Rostovsky, & Ruch (2015)	81	-0.07	0.168	13.589	-5.67
total:	1,140			574.178	-387.129

BIOGRAPHY

Courtney Amber Shields is originally from Abilene, Texas. She graduated with her Bachelors of Science Degree in Psychology from Angelo State University in 2018. She is currently enrolled in the Masters of Science, Counseling Psychology program and will graduate in December 2020. She plans to pursue her Doctorate of Philosophy in Counseling Psychology with a forensic emphasis beginning in the fall of 2021. Ms. Shields has also worked full-time with juvenile offenders with mental health needs throughout her time in the Master's in Counseling Psychology program at Angelo State University.